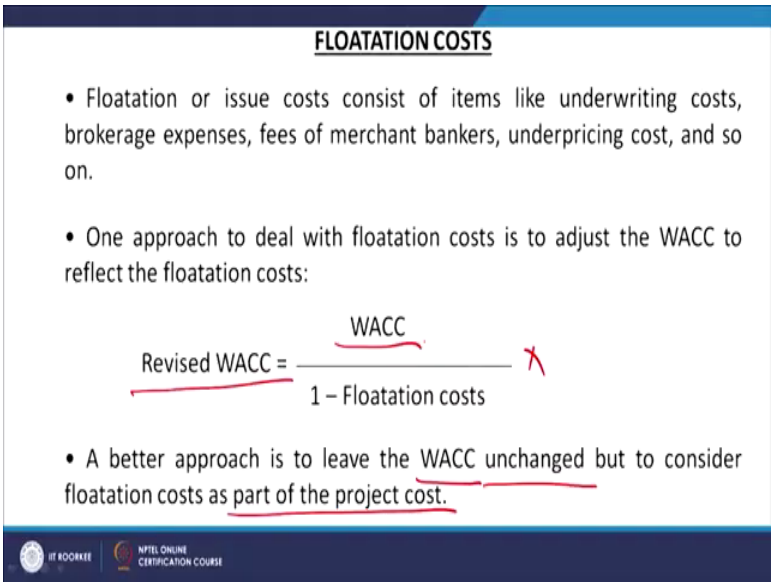
Financial Management for Managers
Professor Anil K. Sharma
Department of Management Studies
Indian Institute of Technology, Roorkee
Lecture 53
Cost of Capital -Part 7

Welcome all. So, we are in the process of learning about the floatation cost and in the previous class I discussed with you that how the flotation cost can be taken care off and can be say, adjusted in the total cost of capital.

(Refer Slide Time: 1:02)

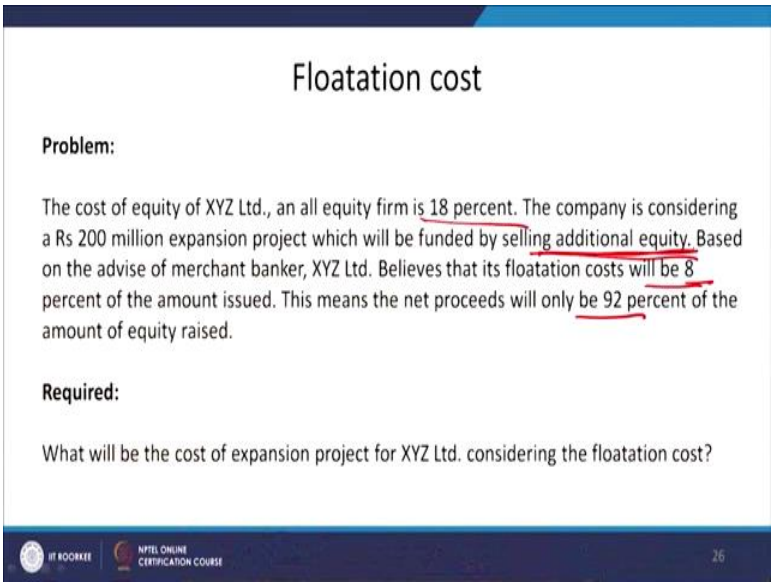


So, we discussed the two approaches in the previous class and say, the first approach was that we can use this particular a process revised working this weighted average cost of capital and we can jack off the say, WACC that is our say a weighted average cost of capital and say, that way it will be a say going up.

For example, we saw that if it is 12 percent then if we add up the floatation cost of the 6 percent also it will become as a 12.77 percent, but that is a wrong approach because the floatation cost is not the annual cost. It is the one time cost. So, the second approach which we discussed in the previous class that I suggested you that yes it is better that the floatation cost must be added into the cost of the project in the total cash outflows.

So, that means, it is one time cost and the cash outflow is also the one time out flow. So, the total outflow we have to work out by adjusting the floatation cost and jacking up the total cash outflow means the total cost of the project or the total cost of establishing that business unit, or that project. So, a second approach I suggested you is much better.

(Refer Slide Time: 2:06)



And to means understand the second approach well. We did this problem and then, we try to understand that how we can say jack up the project cost. So, we have seen that in that process the project cost became 217.39 million and 17.39 million was the floatation cost.

So, I think that seems to be a better analogy, because being a onetime cost you add it up into the project cost and then when we recover the say total project cost through the cash inflows or the project cash inflows then we have not to recover only 200 million in the present value terms but the 217.39 million. So, being a one-time cost it should be adjusted in the project cost not in the weighted average cost of capital, right.

So, we discussed these two approaches in the previous class, fine, but here now the million dollar question is that when I discuss this problem with you that when we say agreed that the floatation cost is 8 percent and then the say final capital proceeds will be left with us is the 92 percent right. So, we have to make it as the 100 percent. So, we have to jack up the total project cost.

But there I only talked to you was that is, please look at this the company is considering a rupees 200 million expansion project which will be funded by selling the additional equity, by selling the additional equity. It means in this particular problem, in this particular case I considered only one source of funding, I considered only one source of funding that is the equity capital, but you would agree with me that in practice it is not only one source of funding but the capital to be invested in the project comes from the different sources, right.

And normally we have the four different sources two are the internal sources which are the say retained earnings, then the equity capital to be issued to the equity shareholders. These are two we can say, for calculating the cost of capital. We considered these two as the internal sources of funds and then the two external sources of funds, preference capital and the debt capital.

So, a preference capital is also considered is as good the debt capital or like a external source of fund for calculating the cost of capital, because the approach of calculating the cost of capital for the preference capital is as same as the say, approach of calculating the cost of debt capital, or the borrowed capital. So, we have, means minimum four sources or at least three sources not one source, not entire capital is going to come from the equity, it is going to come from different sources at least there has to be a appropriate mix of the debt and equity.

So, if that is a case then how we have to calculate the or how we have to adjust the floatation cost? So, in that situation, if for example, the capital is coming not from one source only equity, if it is coming from multiple sources internal, and external. So, it means the floatation cost has to be incurred in the same way, we have to incur the floatation cost on the equity, we have to incur the floatation cost on the preference capital. We have to say, incur the floatation cost on the debt.

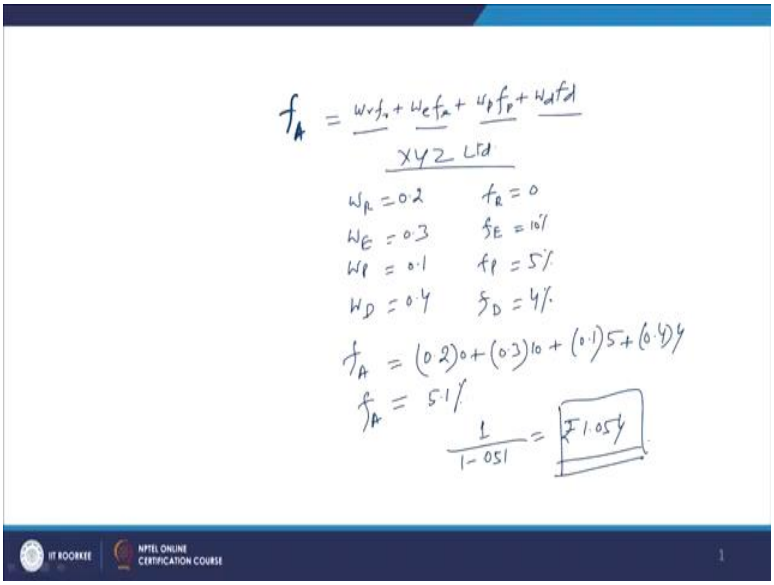
So, it means when the floatation cost is associated to all the say, three sources minimum three sources of the finance. Then certainly we have to take care of the total floatation cost associated to the three sources of the finance. So, simple floatation cost as we learnt to calculate in the previous class will not work. In that case, we will have to work out the weighted average floatation cost, in that case we have to calculate the weighted average floatation cost.

And we have to find out how much floatation cost is required for equity, for the preference capital, for the debt capital, and then we have to say calculate the weighted average floatation

cost to arrive at the say the final cost you can call it as that is a weighted average floatation cost we have to take into account, we have to calculate. And then finally we have to adjust that cost into the total cost of the project.

We will be adding up into the total cost of the project as we have seen that in the previous case it became 217.39 million against the normal cash flows required of the 200. So, 17.39 was the floatation cost. So, the same way will be adding now the floatation cost again in the cash flows of the 200 million but this will be the weighted average floatation cost not as the say simple floatation cost. So, how to calculate the weighted average floatation cost, let us understand that.

(Refer Slide Time: 6:47)



The process of calculating the weighted average floatation cost is something like this where we call it is as f A we call it as f A, here f A is equal to Wr Fr plus We Fe plus Wp Fp plus Wd Fd. So, this way you can calculate the f A. So, what is fA now? F A is basically the weighted average floatation cost, f A is the weighted average floatation cost and this will be calculated by taking care of all the different sources.

So, we have taken the four sources here, one source is the retained earnings, Wr means the proportion of the retained earnings and the floatation cost associated to the retained earnings that is the say component that is becoming Wr multiplied by the Fr then plus say the proportion of the equity capital and the floatation cost associated to the equity capital.

Similarly, the preference capitals or proportion Wp is a proportion of the preference capital, Fp is the say the proportion of the you call it as a say floatation cost for raising the preference capital, and Wd is the proportion of the debt capital, and the Fd is the say proportion of the floatation cost associated to that right.

So, in this case we have to now find out the weightage of the different sources of the funds, or the funds coming from different sources what is the respective weighted of that and then we have to say at the same time ascertain the say source wise floatation cost also. So, number one, you have to find out the say source wise the say proportion of the funds and then the source wise the say proportion of the total floatation cost.

So, so that by multiplying the source of fund, or the proportion of the source of fund with the proportion of the floatation cost and then summing up all the sources and the products of the sources and floatation cost together, we can calculate the weighted average floatation cost. So, we assume here for example, we let us take now the figures for example, the company again I assume is the XYZ limited right.

This is the company and they want to raise the capital for the new project and we are given here whatever that capital amount is going to be the weights are given to us and here are given the WR, WR is given to us is the say 20 percent, then we are given the WE and WE is the say 30 percent and then we are given the weight WP, WP is equal to 10 percent and then we have got the say proportion of the debt and WD is 40 percent.

So, this becomes how much? This becomes 100 percent, this total becomes 1. So, it means the proportions are 20 percent is coming from the retained earnings, 30 percent is coming from the equity capital and 10 percent is coming from the preference capital and then the debt proportion is 40 percent right. And now we have calculated the, we have founded out the floatation cost, right. So, floatation cost is to be found out here. So, if you talk about the say floatation cost here in case of the retained earnings when you talk about the FR, we have taken here FR.

So, FR is 0 because normally there is no floatation cost for the retained earnings as I have discussed with you while talking about floatation cost that in the internal sources of the finance when the retained earnings are concerned. There is no floatation cost because these funds are

easily available with us as the free reserves. So, we can make use of those funds. So, no floatation cost has to be paid So, FR is 0, we have say assumed here.

Then FE floatation cost with regard to the equity is given to us and their cost is the 10 percent, right. Next thing is the floatation cost with regard to the preference capital FP is given to us and the FP amount is 5 percent. This is the 5 percent and finally is the floatation cost associated to the debt and that cost is 4 percent, right. So, these costs are given to us, retained earnings is 0 and equity is 10 percent, preference is 5 percent and debt is the 4 percent, right.

So, our job is now to calculate the fA right, we have to calculate the fA or the flotation cost. So, for calculating the floatation cost we have to now find out the product of these four and then we have to add it up. So, floatation cost is fA is going to how much? This is going to be, what is the first proportion? This is to 20 percent and then we have to multiply it by something that is 0, right?

So, we are going to calculate the now weighted average floatation cost fA is basically the weighted average floatation cost. Second source is the, your equity capital which is how much? 30 percent and the costs associated to that is 10 right. And then next is the, say next proportion is 10 percent and the cost associated to that is how much? 5 and then is the next cost is the debt cost or the debt component, or the source of fund is a debt.

So, it means this amount is say again 40 percent and the cost associated to this is 4, right. So, it means if you try to take it up you can find out here is that the cost associated to these are, say 0 for the retained earnings, 10 percent for the say equity capital and then 5 percent for the preference capital and the 4 percent cost is for the say your the debt capital. So, if you calculate the product of these, so, you can find out the fA is going to be 5.1 percent, fA is going to be 5.1 percent.

So, this is called as the weighted average floatation cost 5 percent is the floatation cost, which means now what we have to do is, we have to as I told you like as we did it in the second case that we have to add up this cost into the total project cost. So, what does it mean? That when we are to say add the, this floatation cost into the project cost. So, we have to adjust it like this. How we have to adjust it? We have to adjust it like this 1 by 1 minus this is how much? Point, this is

the how much, 5.1 percent. So, it is 0.051, right 0.051. So, it means if you solve this, this works out as rupees 1.054.

Now what does it mean? This figure has come up after adjusting the floatation cost. We have got this figure that is 1.054 it means, this indicates, this figure indicates actually after adjusting the floatation cost for all the four sources of the funds. We have got this one figure which is called as 1.054, it means, for raising every rupee of investment or for the purpose of investment in the project we have to raise 1.054 rupees, right.

So, every rupee of investment, every rupee of investment requires raising of the 1.054 rupees it means that means only the investment requirement is 1 rupee but we are going to raise to meet that investment requirements. So, that 1 rupee is available as 1 rupee, we are going to raise not only 1 rupee from the market we are going to raise 1.054 rupees. So, you can say that for every rupee of investment, for every rupee of investment we have to raise now 1.054 rupees.

So, it means this 0.054 is basically the floatation cost component. So, it means if you want to raise 200 million rupees for investment in the project you have to multiply by this factor and accordingly, whatever the amount is comes up is that amount we have to raise. So, if you have to raise means the total amount you have to raise is that is including the weighted average of floatation cost.

So, finally means the right approach what we discussed is that right approach is you add up the floatation cost into the total project cost, but the limitation of the previous second method which we discussed was we considered only one source that is the capital is coming from equity but in the real sense the capital comes from the different sources.

So, in this say, in the improvement upon the second method we discussed in this class and we found it, we assumed that there the four sources from where the capital is coming and all the four sources have some floatation cost. So, we have to calculate the weighted average floatation cost and finally when we calculated the weighted average floatation cost we got one factor and that factor was 1 point means after adjusting the weighted average floatation cost we got one factor and that factor was 1.054.

So, it means now we have got an idea that whatever the investment we want to make whether it is a 200 million, 300 million, 400 million or 100 million for every rupee of investment required to be made in the project you have to raise 1.054 rupees. So, that 0.054 rupees are the floatation cost, we have already added into the total investment required for the total investment required for this project.

So, it means after raising this much of the amount you will have 1 rupee means at least 1 rupee available for making investment in the project. So, if you want to raise the 200 millions for the project cost is 200 million multiplied by this factor. So, you can get that much of the amount, so after paying the even the floatation cost, after paying the flotation cost at the rate of 5.1 percent. We will be sufficiently left with the 200 million rupees which can be invested in the project.

So, it is not the case that only 92 rupees will be available out of 100 rupees because 8 percent is the floatation cost. Since, we have adjusted into the total cost of the project. So, now in this case every amount we want to raise you multiply it by this factor and you will get the total amount including the floatation cost. So, even after paying the floatation cost you will be left with the sufficient amount which is required to be invested in the project according to the cost of the project right.

So, this the concept of the flotation cost, we discussed the three situations, one situation was the floatation cost is there, and first situation was how to adjust the floatation cost. So, we saw that it can be added into the WACC. So, we can jack up the WACC but for the reasons discussed in the previous class we found that is a wrong approach right, because it is not the annual cost. So, we found out the second approach, second approach was that we have to add up the flotation cost into the total project cost, or into your total cash outflows, so that is a correct approach.

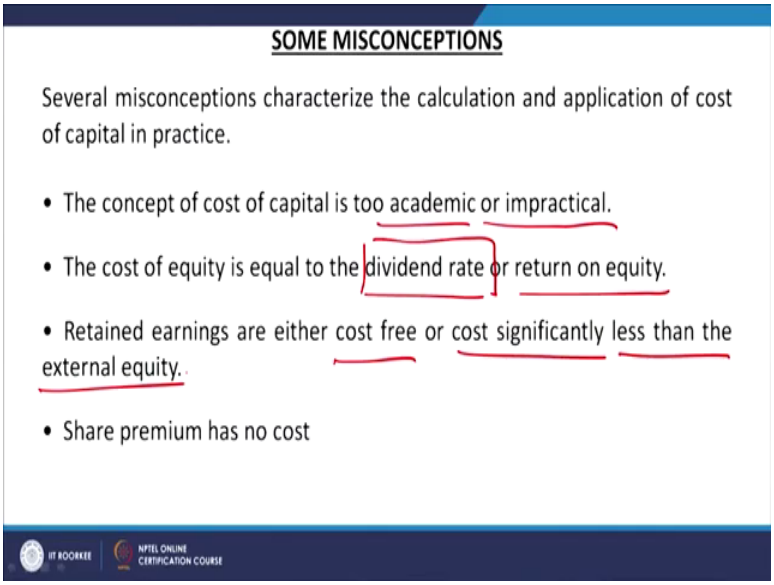
But the limitation of the method we discussed in the previous class was we considered only one source of finance that is equity capital whereas in the real sense, whereas in the real sense capital comes from the different sources. So, we in this class we removed that limitation also, we created a situation where we assumed that the four different sources from where the funds are coming all the four sources, we have identify the floatation cost also.

Then we calculated the weighted average floatation cost and we got one factor, we got the weighted average floatation cost that is 5.1 percent and with the help of that we got one factor that was rupees 1.054. So, it means now, with the help of this factor you can find out any amount, whatever the amount is required to be invested in the project that will be multiplied by this factor.

So, you are not going to raise that much of the amount but plus for by means say the amount for the floatation cost also. So, finally I would say that for every rupee of investment are required to be made, to be invested in the project, for every rupee that is required to be invested in the project we have to raise 1.054 rupees. So, this is the concept of the floatation cost, how we calculate the normal floatation cost, how we calculated the weighted average floatation cost, and how we adjust that in the total cost of the project, right.

Now, I am going to conclude discussion on this say cost of capital, but means as the concluding remarks have to discuss some other important concepts also and the last part of the discussion on the cost of capital is that some misconceptions with regard to the cost of capital, some misconceptions with regard to the cost of capital.

(Refer Slide Time: 20:05)



And the misconceptions here are, first misconception is the cost of capital is too academic and or impractical. Means, in the real sense projects or the firms while making investment into the new

projects they never calculate the cost of capital it is only academic issue, impractical issue and we should not care for that but this is wrong, this is a misconception, this is a practical issue and practically the firms.

So, many surveys have been conducted over a period of time. The book which I am referring here for this discussion Financial Management by Prasanna Chandra in almost every chapter he has given reported the findings of the surveys where the researchers have conducted the research and they have found out which method or different methods are used by the firms in the practical sense to calculate the cost of capital. So, it means it is not academic issue, it is the practical issue and it is always useful, always the weighted average cost of capital is calculated and that plays the role of say calculating the discounted cash flows.

Second misconception is the cost of equity is equal to the dividend rate or return on equity, this is not the dividend rate, cost of capital is not simply the dividend rate, cost of capital is the required rate of return by the equity investors or the equity shareholders. It is a required rate of return and dividend rate is not the required rate of return, dividend depends upon the profitability of the company and say depending upon the profitability board of directors decide every year in the annual general meeting or maybe before the annual general meeting board of directors decide and they announce in the AGM that this much of the dividend is being paid.

So, sometime they pay high amount of dividend, sometime low amount of dividend, sometime no dividend is paid because investment is required within the firm. So, dividend rate has nothing to do with the cost of capital. It is basically the say a rate of return required by the equity shareholders. And rate of return required by the equity shareholders is more than the normal interest rate, because they want some premium for the risk which they are taking by investing their funds into the equity capital of the companies.

Third misconception is retained earnings are either cost free or cost significantly less than the external equity. It is a cost free or the cost is significantly lesser than the external equity, this is also not correct. It is not cost free first of all, it is having the sufficient opportunity cost. It is having the sufficient opportunity cost because we assume it that retained earnings if are not invested into any investment proposal they will be distributed to the equity shareholders and

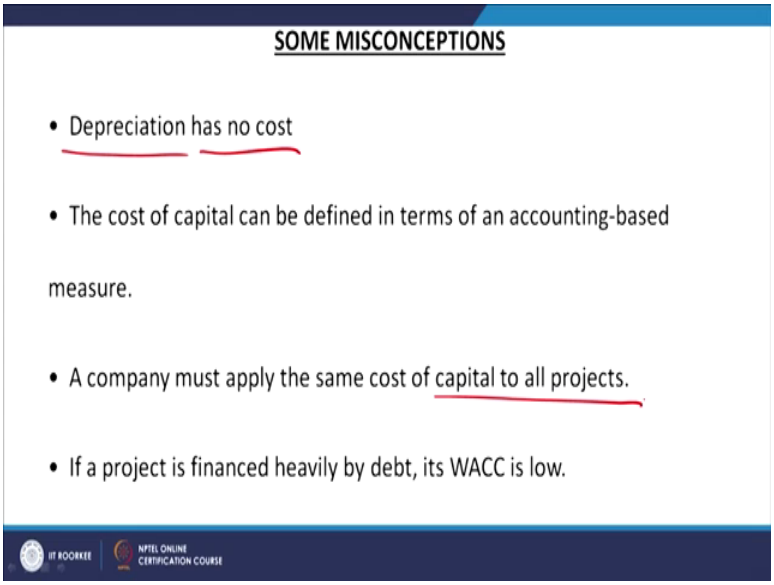
equity shareholders will invest those say retained earnings as per their own liking and the required rate of return.

So, it has the opportunity cost and almost you can treat it as it is having the say cost as equal to the external equity. So, how much return is expected by the new shareholders while issuing the external equity same is the cost of the free reserves or the retained earnings. So, retained earnings are not free of cost, it should be treated as the source having the same cost which is the cost of the external equity being issued a fresh.

Share premium has no cost, this is again a wrong notion because every rupee which the firm owns and going to invest in the business has the opportunity cost, if it is not invested in the proposed project it will be invested elsewhere or it will be say used in some very useful manner because it is the money which belongs to the business and every penny in the business has opportunity cost.

So, it means neither the retained earnings nor the share premium has any kind of the say source or they are not the kind of the source which are free of cost, they have the equal say importance like all external and internal sources of the funds and the cost has to be calculated accordingly.

(Refer Slide Time: 24:24)



Depreciation has no cost, again a wrong notion depreciation has no cost. Now, finally the amount of depreciation which is collected by debiting the amount of depreciation in the profit and loss

account. Since, it is a non-cash expense. So, this amount comes back again to the firm and this amount is say kept safe and has to be used for reinvestment purpose means number one at the time of the replacement of the asset we will be making use of this money.

But in any case, for example, that replacement is not required or that replacement has not to be done because it may be possible that by the time the say technical value or the usefulness of the fixed assets become 0 or it will go out of say usable life we will dismantle the project. Project itself has the life equal to the life of fixed assets. So, it means this amount will be distributed to the equity shareholders.

So, if this amount is to be distributed to the owners of the company, why not it has a cost? It has the same opportunity cost they can invest it somewhere else and earn the desired rate of return so, it is also not free of cost. Next is, the cost of capital can be defined in terms of accounting based measures, no it is not accounting based measures, in accounting based measure when you talk about you debit the say profit and loss account with the say interest cost.

It is not accounting measured. Number one, cost of equity you never show in the accounting records and only the cost of debt we show in the profit and loss account debit side that is the interest cost, but I am talking to is that cost of capital is not simply the interest cost required by the equity shareholders. It is the interest plus some premium required for the (invest) risk they are taking for making this investment in the business.

So, in that situation it has to be something more than the interest cost. So, it cannot be only accounting measure or accounting based measure. Next thing is, a company must apply the same cost of capital to all the projects. We have practically seen in the previous classes to all the projects, we have seen in practically that the company cost of capital is different and the project cost of capital is different, because the risk profile of the company and risk profile of the project is not same.

So, if different projects are going to be undertaken by the company they cannot be say applied the same cost of capital because risk profile of every project being different, we have to treat it as a independent investment say entity and we have to say calculate the cost of capital depending

upon the amount of risk associated to that project. So, it means, the cost of capital for the company is different, for the project is different.

And the last one is that if the project is financed heavily by debt, it is WACC is low. If it is financed heavily by the debt, it is WACC is low. It is a very contentious issue that if the project is financed heavily by the debt its weighted average cost of capital is low. So, this issue is not very simple you can call it as, if it is given there it is not as simple as it looks, because a lot of debate has happened in the past.

And this question I will be in a position to answer in the next topic which I am going to start after this say completion of discussion on the cost of capital and that topic is the capital structure which I am going to start. So, in that topic this question has been answered very clearly, initially when the proper organized theory on the capital structure was not there and we assumed that first organized theory was given to us by the Modigliani and Miller in 1958.

Before that we had the unorganized thoughts you can call it as about the say you call it as the cost of equity and the cost of debt different approaches were there but they were not the mathematical approaches. So, the real thinking was started with the say pronouncement of the theory on the capital structure first, theory on the capital structure in their seminal works by Modigliani and Miller, who gave the first theory in 1958.

So, they in the beginning like other theories on the capital structure, they also agreed in the beginning that the cost of capital or maybe the say the value of the firm does not depend upon the capital structure, because both the sources internal as well as external have the same cost. And if you say that debt is cheaper than equity then it is not correct, that is say cheaper than equity is not correct.

But now the latest, now the latest, now the say established outcomes of the different researches in the different say analysis on the capital structure as well as on the different sources of the finance that yes this misconception is that yes that is cheaper and not heavily cheaper. If the project is financed heavily by the debt it is WACC is low, yes it will be comparatively low because that debt has the tax deductible advantage which is not there with the equity.

So, I agree that this misconception is not a misconception it is agreeable point that yes even the all the theories, now the latest theories of the capital structure also have proved that if that debt component in any companys capital structure is more than certainly the overall cost of capital is going to be lesser. Initially it was not agreed even by the Modigliani and Miller also initially they agreed that say there is one approach in the capital structure which I will discuss with you after this completion of discussion that is a net operating income approach.

Net operating income approach says that the cost of debt and cost of equity is same and overall cost of the capital of the firm is not affected by having the different proportions of the debt and equity, because cost of both the sources is same. So, same was the case, was the theory which was propounded by Modigliani and Miller, capital structure theory in 1958, they also agreed that yes the capital structure does not affect the firms value.

But now the latest thought is that yes capital structure makes a difference and if the debt component in the capital structure is high certainly the overall cost of capital of the firm comes down and it helps to say maximize the value of the firm right. But here, we have to take into consideration so many factors that when debt comes in the say capital structure of the firm it brings lot of risk right. So, the cost of capital is comparatively lower but the risk element goes up.

So, we have to be very careful while deciding about the debt component in any investment proposal and simply if you look at that because it has that say tax deductible advantage. So, heavy debt oriented capital structure should be created for the project that is not going to be the say true or the say you can call it as the rational thing. So, certainly the weighted average cost of capital will be low if the say element of the debt is high in the capital structure of the firm.

But it has to be discussed or to be taken into account by considering so many other factors and one important factor is the risk factor. So, these are some misconceptions which I discussed with you in the summarized firm quickly, for the detailed reference, detailed learning about these misconceptions and for the other important concepts of the cost of capital also again you can refer to any good book on the financial management.

So, many books are there in the market you can buy, I have given 4-5 books and my course plan also but the book which I am following for all this discussion if you buy that I think most of the doubts will be clear and that book is the Financial Management by Prasanna Chandra. So, remaining discussion or for any kind of the doubts and the detailed reference you can refer to the book as I told you that is the Financial Management by Prasanna Chandra.

So now, with this I close the discussion of the cost of capital and now after this we will move forward with the next part and the next part is a very important component of the overall financial management and that component is the capital structure.

Now, I will discuss the capital structure in detail and after learning about the capital structure and the impact of the capital structure on the value of the firm you would understand that what is important, importance of the cost of capital and how it impacts the say capital structure of the firm and what are the different sources of the funds, what is the cost associated to them. How that can be taken into account while determining the capital structure of the form.

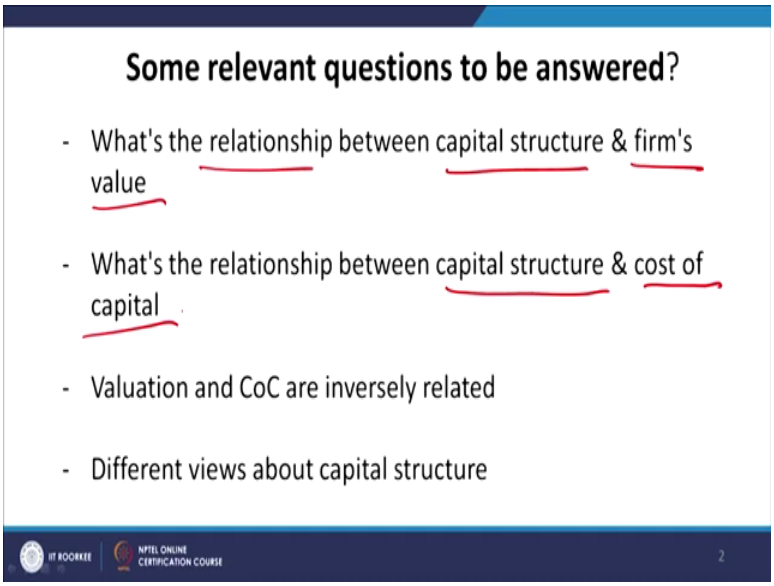
So, now let us learn in detail about the next important topic, next important component that is the capital structure and the firm value. So, capital structure and firm value it is a very interesting topic, it is very interesting area and the area of long debate were the financial experts for many years even today also sometimes this thought comes in the mind of many financial experts that is there any importance of the capital structure in the say overall say capital structure of the firms, should be bothered about that from where the funds should come in the businesses.

Whether they should come from the debt or they should come from the equity or if we raise the funds more from the debt or less from the equity. So, is it going to be any impact upon the say cost of the capital because ultimate objective of every business or any business or any business activity is the maximization of the value of the firm and the firms value will be maximized if the total cost of production including financial cost is as low as possible.

Because in todays scenario if you want to increase the profitability of the business it is not possible to increase the profits by increasing or jacking up the selling price of the product or the services. The moment you increase the say selling price of the product or services people may even stop buying the product or service because it may go out of their reach, right.

So, what you have to do is, you have the second strategy available with you and that is reducing the cost of production and when you talk about the cost of the production financial cost makes a lot of difference here. So, we talked about say how to deal with the financial cost or cost of capital, so what we discussed in the previous say number of classes including in this class also something about the cost of capital.

(Refer Slide Time: 35:46)



So, now we are going to talk about that, that in the practical sense how the cost of capital matters and capital structure when we talk about or when we think the cost of capital in terms of the capital structure because ultimate focus is upon the something which is called as the firm value. This is the focus and this is ultimate objective of any financial management process or any financial management say exercise.

So, it means, we can say that capital structure and firm value if this topic is given here and all the times when we talk about the capital structure, we always remember about the value of the firm, right. So, it means there must be some relationship of the capital structure with the value of the firm and that to in terms of the cost of capital, right. So, let us discuss in detail that what is the capital structure?

What is the cost of capital that have already talked about, we have learned about and what is the capital structure and how the capital structure affects a cost of capital and ultimately say

contributes in the maximization of the firms value. So, let us first understand the some relevant say concepts, or in a way I can say let us answer some of the relevant questions right. First, we will answer some of the relevant questions then you will be able to understand that how capital structure or its importance is building up or is so important to learn about the concept of the capital structure being a student of finance or the financial management, right.

So, first question here is what is the relationship between the capital structure and firms value? So, this the relationship between capital structure and firms value, this is a million dollar question. Second question, what is the relationship between the capital structure and the cost of capital? Is there any relationship? Now, what is the question, that is there any relationship? What is the relationship between say capital structure and a firm value? And what is the relationship between the capital structure and cost of capital?

So, it means when we are asking these questions, so you should get an idea that yes there is a relationship between the capital structure and firms value, there is a relationship between the capital structure and cost of capital. And third important question is valuation and cost of capital are inversely related, because if the cost of capital is high value of the firm will come down and if the value of the firm has to be taken as high as possible you have to manage the cost of capital.

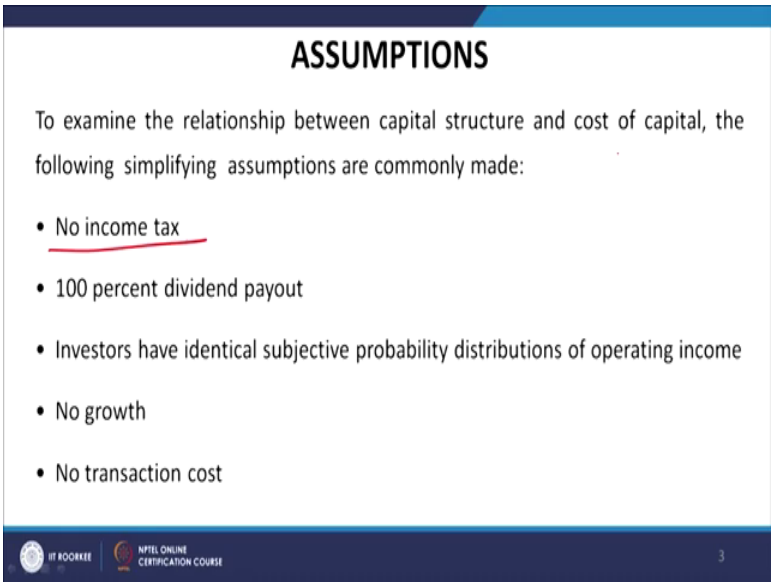
So, it is certainly a inverse relationship and we have to understand that if you want to increase the overall value of the firm then you have to control the cost of capital. So, whether capital structure plays any rule in lowering down the say cost of capital that we are going to learn in this entire discussion in the next few classes. Then different views about capital structure, yes, there are the different views about the capital structure but now if you talk about say the era till 1958 when the first theory was systematic theory, mathematical theory was propounded by two financial economist Modigliani and Miller till then you can call it as different views were there.

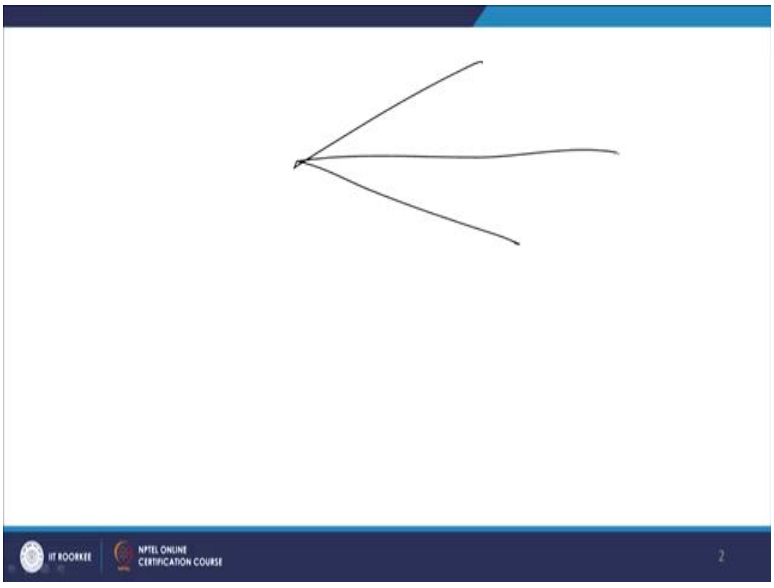
And even Modigliani and Miller were also not clear whether there is any relationship between the say capital structure and the cost of capital, capital and the firm value or not. In their first theory as I told you just now that they also rejected the hypothesis that capital structure impacts the value of the firm, but later on they came out with the second proposition and the second preposition they have themselves agreed that yes if the debt component in the companys capital

structure is high then certainly the cost of capital goes down and it adds to the value maximization of the firm, right.

So, these are four important questions which we will like to answer in the subsequent discussion and we would like to know about that how to say decide the capital structure the best and the optimum capital structure of the firm and how to maximize the value of the firm.

(Refer Slide Time: 40:09)





Now, here we talk about the assumptions and the assumptions are like, first one is to examine the relationship between capital structure and cost of capital, the following simplifying assumptions

are commonly made. The following say simplifying assumptions are commonly made because if you do not take these assumptions, if you do not make these assumptions, if you do not assume anything and if you assume that say dividend is also paid as per the policy of the firm.

If you say that tax is impact the overall cost of capital and the value of the firm, if you say that the firm is having the different profitability situation then what is going to happen? In that case no say you can call it as acceptable answer is going to be available. So, when we are going to talk about the capital structure and its impact upon the firms value, we are going to say that we are going to assume certain pre-conditions and these certain pre-conditions are first condition is, no income tax.

That firm has not to pay, they are most impractical assumptions but when we say add means or you can call it as remove these assumptions then the capital structure start dwindling. But if you say we have assumed a very plane situation, no hurdles are there, no say different situations are there and if we have assumed all these things how the capital structure will be decided and whether that capital structure will have any impact on the firms value or not.

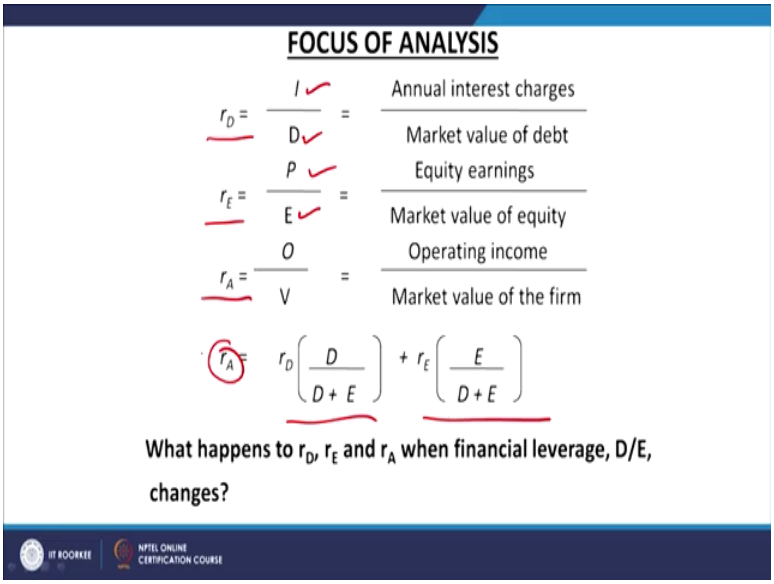
So, first is the no income tax, first assumption. Second is, 100 percent dividend payout, whatever the profitability is there with the firm there is no retention of the profitability and whatever the firm earns that is paid as the dividend.

Third is, investors have identical subjective probability distribution of operating income, subjective probability distribution of the say operating income that say between the distribution of the operating income between the debt suppliers or the landers and the equity shareholders everybody understands that depending upon the risk and return of the firm how much or which part will go to the debt suppliers or to the lenders, how much will come back to the equity shareholders all the investors have the identical say subjective probability or their distribution is known to the all the almost all the investors, no growth firm is stable.

There is no increase in the profitability, there is no decline in the profitability, firm is operating at the same level in the form of a straight line, means you cannot say that there is a situation something like this or there is situation like this, firm is moving like this, the profitability is moving like this. So, it means there is no growth we have not assumed any growth here.

And no transaction cost, no transaction cost that when you raise the funds you have not to pay any transaction cost or sometime when you have the surplus you invest in the market, or when you convert that say security into the cash, no transaction costs has to be paid. So, these are the five important assumptions have been taken here or taken into account and on the basis of these assumptions we are going to now proceed further that if these assumptions are held true or if these assumptions hold good then how the capital structure will be decided.

(Refer Slide Time: 43:35)



Now, focus of analysis, this is the focus of analysis is here first of all we will learn about the say the process of calculating the cost of individual sources or funds, then we will say learn how to calculate the say overall cost of the firm, or cost of say you can call it as the cost of the capital for the firm and then we will apply these say focal points to different discussion points or in the different theories or in the different processes.

So, here when you talk about the different sources of the funds we talk about here is that is the debt capital, equity capital and RA is the overall capitalization rate that is the you can call it as a weighted average cost of capital. RA is basically the weighted average cost of capital. So, how we calculate the cost of debt? Cost of debt is basically I oblige D. So, I is basically I represent the interest part and D represent the market value of the debts.

So, it is written here as annual interest charges divided by the market value of the debt and how we calculate the cost of equity? Cost of equity is that is the say equity earning, P means the payout ratio and payout ratio decides how much is going to be paid out of the profit which part of the profit, or how much part of the profit is going to be paid to the equity shareholders and then E is the market value of the equity, right.

And O is the, so it means this is a cost of debt, this is a cost of equity, and this is the overall RA is the overall capitalization rate of the firm. Which depends upon the or which is calculated with the help of this thing and this if you look at it is same thing what we discussed in the cost of capital RA is basically the weighted average cost of capital. So, RA is to be decided with the help of how, operating income divided by the market value of the firm.

So, it is the operating income divided by the market value of the firm, so it means finally RA you can call it as RA is going to be calculated, RA is basically the weighted average cost of capital and how we are going to calculate the weighted average cost of capital here? That is depending upon the component of debt, the component of equity.

So, what we are saying, this RD is the cost of debt and this is the proportion of the debt in the total capital structure. And this is a cost of equity RE multiplying, multiplied by this the proportion of equity, this is E divided by total capitalization that is a debt plus equity. So, finally the product of this becomes RA and RA is the weighted average cost of capital which will be say depending upon the say operating income and the market value of the firm.

So, the weighted average cost of capital can be calculated if we know the cost of debt, if we know the cost of equity and their respective proportions in the capital structure. From here we now say raise the issue or this question that if there is no difference in the cost of the two, if the debt and equity are available at the same cost then why not to bring the 100 percent debt in the firm or why not to bring 100 percent equity in the firm, or why should be bothered about or why there is stipulation that debt equity ratio has to be 2 is to 1.

Then any debt equity ratio can we had why people think about that we have to go for debt, we have to go for equity, the proportions have to be like this. So, it means there must be some reason

that is why the weighted average cost of capital is calculated and the proportions of the different sources of the funds in the capital structure are worked out and decided accordingly, right.

Now, we move to the next important part after talking about the basics of the capital structure, we moved to the different approaches, different approaches which have try to answer the questions pertaining to the deciding of the capital structure of the firms but these approaches three approaches we are going to discuss initially which are called as the unorganized frequent say fragmented approaches of say is the capital structure.

First approach is the net income approach, then is the net operating income approach, and third one is the traditional approach. These approaches were available or were being say accorded lot of importance. When the say standard theory the say systematic theory of the capital structure given for the first time by the Modigliani and Miller in 1958 was not available.

Till then these three theories, fragmented theories were available and some people said that capital structure does not make any difference. Some people said that yes capital structure makes the difference, some people say that yes it makes a difference, it may not make the difference. So, it means they were totally the unorganized thoughts, not based upon any kind of the say systematic research or any kind of the mathematical modeling.

But from the Modigliani and Miller era onwards from 1958 onwards, now we the systematic theories of the capital structure, but before you move to the Modigliani and Miller theory, we will first have to learn about these three approaches of the capital structure, net income approach, net operating income approach, and traditional approach.

So, that after building the foundation and knowing about that before the Modigliani and Miller, what other approaches talk about the capital structure and do these approaches have any importance or carry any importance even the era of today or not. So, one by one we will discuss these say first three approaches and then we will move to the next fourth approach given by the Modigliani and Miller or the capital structure theory of the, capital structure theory given by the Modigliani and Miller. So, all these three approaches and the fourth one given by the Modigliani and Miller we will discuss in the next class. Till then thank you very much.